

WEST Search History

DATE: Thursday, May 29, 2003

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DB=USPT,PGPB; PLUR=YES; OP=ADJ

L13	L12 and stress	24	L13
L12	L2 and transgenic	91	L12
L11	L10 and stress	25	L11
L10	L2 and antisense	83	L10
L9	L2 and turgidity	2	L9
L8	l2 and abscisic acid	6	L8
L7	l2 and abscisic acid	0	L7
L6	L2 and diffusion resistance	1	L6
L5	l2 and transpiration	1	L5
L4	l2 and drought	9	L4
L3	L2 and stomat\$	9	L3
L2	L1 and plant	429	L2
L1	pld or phospholipase d	5612	L1

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NEWS 19 Jan 29 Simultaneous left and right truncation added to COMPENDEX,
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NEWS 20 Feb 13 CANCERLIT is no longer being updated
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NEWS 24 Feb 26 NTIS now allows simultaneous left and right truncation
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NEWS 29 Mar 24 Additional information for trade-named substances without
structures available in REGISTRY
NEWS 30 Apr 11 Display formats in DGENE enhanced
NEWS 31 Apr 14 MEDLINE Reload
NEWS 32 Apr 17 Polymer searching in REGISTRY enhanced
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WPIDS/WPINDEX/WPIX
NEWS 35 Apr 28 RDISCLOSURE now available on STN
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NEWS 37 May 15 MEDLINE file segment of TOXCENTER reloaded
NEWS 38 May 15 Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 39 May 16 CHEMREACT will be removed from STN
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NEWS 41 May 19 RAPRA enhanced with new search field, simultaneous left and
right truncation

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FILE 'BIOSIS' ENTERED AT 09:36:26 ON 29 MAY 2003
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=> s pld? or phospholipase d
L1 11845 PLD? OR PHOSPHOLIPASE D

=> S 11 and plant?
L2 824 L1 AND PLANT?

=> s 12 and transgenic
L3 43 L2 AND TRANSGENIC

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=> dup rem 13
PROCESSING COMPLETED FOR L3
L4          30 DUP REM L3 (13 DUPLICATES REMOVED)
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=> d 1-10 t i

L4 ANSWER 1 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Use of **phospholipase D** gene of *Arabidopsis thaliana* in regulating drought tolerant of **transgenic plants**

L4 ANSWER 2 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Protein and cDNA sequence of **plant** proteins and enzymes and
their uses in controlling **phospholipase D** expression
in **transgenic plants**

L4 ANSWER 3 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Developmental regulation of **phospholipase D** in tomato
fruits

L4 ANSWER 4 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Expression vector construction for expression of foreign gene in chloroplasts of **plants**

L4 ANSWER 5 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) DUPLICATE 1

TI T4 lysozyme and attacin genes enhance resistance of **transgenic** 'Galaxy' apple against *Erwinia amylovora*.

L4 ANSWER 6 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Identification of viruses capable of breaking **transgenic** resistance of papaya conferred by the coat protein gene of Papaya ringspot virus

L4 ANSWER 7 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI A role for **PLD** beta/gamma in the N-acylethanolamine activation of phenylalanine-ammonia lyase gene expression.

L4 ANSWER 8 OF 30 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 2
TI Transformation of *Populus tomentosa* with anti-**PLD** gene

L4 ANSWER 9 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI A rapid cytokinin response assay in *Arabidopsis* indicates a role for **phospholipase D** in cytokinin signalling

L4 ANSWER 10 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Antisense DNAs of nematode genes expressing in **transgenic** **plants** for parasite resistance

=> d ab

L4 ANSWER 1 OF 30 CAPLUS COPYRIGHT 2003 ACS
AB Methods of growing **plants** having modified transpiration rates are provided. In particular, the present invention relates to **phospholipase D** gene of *Arabidopsis thaliana* in regulating drought tolerant of **transgenic plants**. Such methods permit more efficient water conservation through regulation of stomatal closure responses. Accordingly, modified **plants** can be grown in areas which were previously unsuitable for growth and **plants** which can withstand drought conditions can be grown.

=> d pi

L4	ANSWER 1 OF 30 CAPLUS COPYRIGHT 2003 ACS	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003074692	A1	20030417	US 2001-817869	20010326	

=> d in

L4 ANSWER 1 OF 30 CAPLUS COPYRIGHT 2003 ACS
IN Wang, Xuemin; Sang, Yongming

=> d 5 ab

L4 ANSWER 5 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States

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(2003)

AB Genes encoding lysozyme (T4L) from T4 bacteriophage and attacin E (attE) from *Hyalophora cecropia* were used, either singly or in combination, to construct **plant** binary vectors, **pLDB15**, **p35SAMVT4**, and **pPin2Att35SAMVT4**, respectively, for Agrobacterium-mediated transformation of 'Galaxy' apple, to enhance resistance to *Erwinia amylovora*. In these plasmids, the T4L gene was controlled by the cauliflower mosaic virus 35S promoter with duplicated upstream domain and the untranslated leader sequence of alfalfa mosaic virus RNA 4, and the attE gene was controlled by the potato proteinase inhibitor II (Pin2) promoter. All **transgenic** lines were screened by polymerase chain reaction (PCR) for T4L and attE genes, and a double-antibody sandwich enzyme-linked immunosorbent assay for neomycin phosphotransferase II. Amplification of T4L and attE genes was observed in reverse transcriptase-PCR, indicating that these genes were transcribed in all tested **transgenic** lines containing each gene. The attacin protein was detected in all attE **transgenic** lines. The expression of attE under the Pin2 promoter was constitutive but higher levels of expression were observed after mechanical wounding. Some T4L or attE **transgenic** lines had significant disease reduction compared to nontransgenic 'Galaxy'. However, **transgenic** lines containing both attE and T4L genes were not significantly more resistant than nontransgenic 'Galaxy', indicating that there was no **in planta** synergy between attE and T4L with respect to resistance to *E. amylovora*.

=> d d 2 ab

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REENTER DISPLAY FORMAT FOR ALL FILES (FILEDEFAULT):ab

L4 ANSWER 2 OF 30 CAPLUS COPYRIGHT 2003 ACS

AB This invention relates to protein and cDNA sequences of **phospholipase D** sequence homolog from soybean, wheat, and corn. The invention also related to protein and cDNA sequences of respiratory burst oxidase homolog RbohA, RbohB, RbohC, RbohD, RbohE, RbohF sequence homolog from soybean, wheat, rice, and corn. The invention also related to protein and cDNA sequences of tRNA 5-aminomethyl-2-thiouridylate 5'-methyltransferase sequence homolog from corn and soybean. The invention also related to protein and cDNA sequences of chromomethylase sequence homolog from Jerusalem Artichoke, corn, rice and wheat. The invention also related to protein and cDNA sequences of DNA cytosine 5-methyltransferase sequence homolog from rice, soybean, and wheat. The invention also related to protein and cDNA sequences of transcription factor TFIIF subunit .alpha. and .beta. sequence homolog from corn, rice and wheat. The invention also related to protein and cDNA sequences of asparaginyl-tRNA synthetase sequence homolog and gutaminyl-tRNA synthetase sequence homolog from corn, soybean, wheat and rice. The invention also related to protein and cDNA sequences of protein EDS1 (enhanced disease susceptibility 1) sequence homolog and clathrin-assocd. AP-2 complex AP50 subunit sequence homolog from corn, rice, soybean, and wheat. The invention also related to protein and cDNA sequences of .alpha.-adaptin sequence homolog and .beta.-adaptin sequence homolog from corn, rice, soybean, and wheat. The invention also relates to the construction of a chimeric gene encoding all or a substantial portion of the **phospholipase D**, in sense or antisense orientation, wherein expression of the chimeric gene results in prodn. of altered levels of the **phospholipase D** in a transformed host cell.

=> d 2 pi

L4 ANSWER 2 OF 30 CAPLUS COPYRIGHT 2003 ACS
PATENT NO. KIND DATE APPLICATION NO. DATE

PI US 2003003471 A1 20030102 US 2002-78770 20020219

=> d 2 in

L4 ANSWER 2 OF 30 CAPLUS COPYRIGHT 2003 ACS
IN Famodu, Omolayo O.; Miao, Guo-Hua; Simmons, Carl R.; Weng, Zude; Cahoon, Rebecca E.; Sakai, Hajime; Qun, Zhu; Thorpe, Catherine J.; Fader, Gary M.; Li, Bailin

=> d 3 ab

L4 ANSWER 3 OF 30 CAPLUS COPYRIGHT 2003 ACS
AB The catabolism of phospholipids initiated by **phospholipase D** (PLD, EC 3.1.4.4) is an inherent feature of developmental processes that include fruit growth and ripening. In cherry tomatoes (*Lycopersicon esculentum* Mill.), sol. and membrane-assocd. PLD activities increased during fruit development, which peaked at the mature green and orange stages. The increase in PLD activity was assocd. with a similar increase in the intensity of a 92 kDa band as demonstrated by western blot anal. A full-length cDNA having 2430 bp and encoding a putative polypeptide with 809 amino acids, was isolated using tomato RNA, RT-PCR and 5' and 3' rapid amplification of cloned ends (RACE). Anal. of the primary and secondary structures showed the presence of the C2 domain, the PLD domain and several other features characteristic of PLD alpha. Microtom tomato **plants** transformed with antisense PLD alpha cDNA, were similar to untransformed **plants** and showed normal fruit set and development. The ethylene climacteric was delayed by over 7 d in the antisense PLD fruits, indicative of a slower ripening process. The leaves and unripened fruits of antisense PLD microtom **plants** possessed lowered PLD activity and PLD protein, as demonstrated by western blotting. However, during ripening, PLD activity in the **transgenic** fruits was maintained at a higher level than that in the untransformed control. Immunolocalization of PLD in microtom tomato fruits revealed the cytosol-membrane translocation of PLD during fruit development. The ripe fruits of antisense PLD **celebrity** **plants** possessed lowered PLD expression and activity and showed increased firmness and red color. These results suggest that the expression of antisense PLD cDNA could be variable in different tomato varieties. The potential role of PLD in ethylene signal transduction events is discussed.

=> d 3 so

L4 ANSWER 3 OF 30 CAPLUS COPYRIGHT 2003 ACS
SO Plant Physiology and Biochemistry (Paris, France) (2003), 41(3), 223-240
CODEN: PPBIEX; ISSN: 0981-9428

=> d 4 ab

L4 ANSWER 4 OF 30 CAPLUS COPYRIGHT 2003 ACS
AB This invention provides a process of constructing of a expression vector for expression of foreign in chloroplasts of **plants**. The vector featured in contng. a ribosome binding site and promoter and terminator

sequences from chloroplasts. The vector can be used for foreign gene expression specifically in chloroplasts of **transgenic plants**.

=> d 8 ab

L4 ANSWER 8 OF 30 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 2
AB Antisense **phospholipase D**.gamma. (**PLD**.gamma.) gene was introduced into *Populus tomentosa* mediated by *Agrobacterium tumefaciens*. The young leaves of triploid *populus* were used as the material and the regeneration system of high frequency has been established. The traditional transgene method by *Agrobacterium tumefaciens* and obtained many **transgenic plants** of anti-**PLD**.gamma. gene. These showed that the **transgenic plants** can grow well on the culture medium with 0.7% NaCl.

=> d 8 so

L4 ANSWER 8 OF 30 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 2
SO Yichuan (2002), 24(1), 40-44
CODEN: ICHUDW; ISSN: 0253-9772

=> d 9 ab

L4 ANSWER 9 OF 30 CAPLUS COPYRIGHT 2003 ACS
AB Seedlings of *Arabidopsis thaliana* harboring a fusion of the cytokinin-responsive ARR5 gene promoter and the GUS reporter gene were used for a pharmacol. approach to study cytokinin signal transduction. The assay was shown to be rapid, sensitive, dose-dependent and highly specific for cytokinins, both adenine and phenylurea derivs. Numerous inhibitors of known signalling pathways were tested and some were shown to suppress reporter gene induction. Particularly, primary alc. that specifically inhibit **phospholipase D** (**PLD**) partially prevented cytokinin-induced GUS activity and reduced the accumulation of ARR5 gene transcripts. This indicates a role for **PLD** early during cytokinin signalling.

=> d 9 so

L4 ANSWER 9 OF 30 CAPLUS COPYRIGHT 2003 ACS
SO FEBS Letters (2002), 515(1-3), 39-43
CODEN: FEBLAL; ISSN: 0014-5793

=> d 11-20 ti

L4 ANSWER 11 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Hormone-dependent insertional mutants of *Arabidopsis thaliana* with reduced viability and fertility

L4 ANSWER 12 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Collection of *Arabidopsis thaliana* morphological insertion mutants

L4 ANSWER 13 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) DUPLICATE 3

TI Involvement of a novel *Arabidopsis phospholipase D*, AtPLDdelta, in dehydration-inducible accumulation of phosphatidic acid in stress signalling.

L4 ANSWER 14 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI Low temperatures reduce seed production in *Arabidopsis plants*.

L4 ANSWER 15 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003)

TI Regulation of **plant** water loss by manipulating the expression of phospholipase Dalpha.

L4 ANSWER 16 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI Overexpression of the Bt cry2Aa2 operon in chloroplasts leads to formation of insecticidal crystals.

L4 ANSWER 17 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Modification of lipid biosynthesis by DNA shuffling

L4 ANSWER 18 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003)

TI Involvement of **Phospholipase D** in wound-induced accumulation of jasmonic acid in *Arabidopsis*.

L4 ANSWER 19 OF 30 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 4
TI Effect of untranslated leader sequence of AMV RNA 4 and signal peptide of pathogenesis-related protein 1b on attacin gene expression, and resistance to fire blight in **transgenic** apple

L4 ANSWER 20 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Insertional mutagenesis in *Arabidopsis thaliana*: presonation of germinating seeds increases the efficiency of their transformation

=> d 13 ab

L4 ANSWER 13 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) DUPLICATE 3

AB Phospholipid metabolism is involved in **plant** responses to drought and salinity stress. To investigate the role of **phospholipase D (PLD)** and its product phosphatidic acid (PtdOH) in stress signalling, we isolated a novel **PLD** cDNA, designated AtPLDdelta, by screening a cDNA library prepared from dehydrated *Arabidopsis thaliana*. The AtPLDdelta protein, of 868 amino acids, has a putative catalytic domain and a C2 domain that is involved in Ca²⁺/phospholipid binding. The AtPLDdelta mRNA accumulated in response to dehydration and high salt stress. Histochemical analysis showed that the AtPLDdelta gene is strongly expressed in the vascular tissues of cotyledons and leaves under dehydration stress conditions. Under normal growth conditions, AtPLD delta was expressed in roots, leaves, stems and flowers but not in siliques. We showed that dehydration stimulates the accumulation of PtdOH. The accumulation of PtdOH in response to dehydration was significantly suppressed in AtPLD delta antisense **transgenic plants**. These results suggest that AtPLD delta may be involved in PtdOH accumulation in the dehydration stress response.

=> d 13 so

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DUPPLICATE 3

SO The Plant journal : for cell and molecular biology, June 2001. Vol. 26, No. 6. p. 595-605
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412

=> d 14 ab

L4 ANSWER 14 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AB *Arabidopsis thaliana* (Columbia) and a **transgenic** line (anti-alpha **PLD**) with suppression of **phospholipase D** activity and improved freezing tolerance were used to examine the effects of low temperatures on their growth, specifically flowering and seed production. **Plants** were cooled at 1 C/h from 0 degreeC to -6 degreeC and held at each test temperature for 1 h and subsequently grown in a growth chamber at 22 degreeC with 10 h light to observe **plant** height, flowering time and morphology, and seed yield. All the growth characteristics measured in the wild type and anti-alpha **PLD plants** were adversely affected by exposure to low temperatures, more so in the **transgenic plants** than the wild type **plants**. The **plant** height decreased more or less linearly as temperature decreased and in the **transgenic plants** stem branching ceased after exposure to 0 degreeC or below. Flowering was delayed by low temperatures, by as much as 7 days in the **transgenic plants** exposed to -4 degreeC. Typically, the untreated **transgenic plants** produced about 8% to 10% less seeds than do their wild type counterparts, as they have fewer flowers and shorter siliques. Although low temperatures reduced seed yield in both wild type and **transgenic plants**, the reduction was more severe in the **transgenic plants**. In **plants** exposed to 0 degreeC, the seed yield was reduced by 15% in the wild type and 30% in the **transgenic plants**. At -4 degreeC, seed yield was reduced by 60% in the wild type and by 90% in the **transgenic plants** at -5 degreeC. Thus, although the **transgenic plants** were freezing tolerant (killing temperature of -5.5 degreeC), they produced very little seeds below -4 degreeC. The results show the adverse effect of low temperatures, especially sub-zero temperatures, on the overall growth and seed production in *Arabidopsis plants*.

=> d 14 so

L4 ANSWER 14 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
SO Hortscience, (June, 2001) Vol. 36, No. 3, pp. 548. print.
Meeting Info.: 98th Annual International Conference of the American Society for Horticultural Science Sacramento, California, USA July 21-25, 2001
ISSN: 0018-5345.

=> d 15 ab

L4 ANSWER 15 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003)
AB **Phospholipase D (PLD)** has been implicated in various processes, including signal transduction, membrane trafficking, and membrane degradation. Multiple forms of **PLD** with distinct biochemical properties have been described in the cell. In *Arabidopsis*,

PLD α and **PLD γ** , but not **PLD β** , were detected in guard cells, and antisense suppression resulted in a specific loss of **PLD α** . The abrogation of **PLD α** rendered plants less sensitive to abscisic acid and impaired stomatal closure induced by water deficits. **PLD α** -depleted plants exhibited accelerated transpirational water loss and a decreased ability to tolerate drought stress. Overexpression of **PLD α** enhanced the leaf's sensitivity to abscisic acid. These findings provide molecular and physiological evidence that **PLD α** plays a crucial role in regulating stomatal movement and plant-water status.

=> d 15 so

L4 ANSWER 15 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003)

SO The Plant journal : for cell and molecular biology, Oct 2001. Vol. 28, No. 2. p. 135-144
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412

=> d 15 au

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AU Sang, Y.; Zheng, S.; Li, W.; Huang, B.; Wang, X.

=> d 21-30 ti

L4 ANSWER 21 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI **Phospholipase D**-mediated activation of NADPH oxidase and reactive oxygen generation in *Arabidopsis*.

L4 ANSWER 22 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI Molecular cloning and functional analysis of polyphosphoinositide-dependent **phospholipase D**, **PLD-beta**, from *Arabidopsis*.

L4 ANSWER 23 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) DUPLICATE 5

TI Identification and characterization of a novel plant **phospholipase D** that requires polyphosphoinositides and submicromolar calcium for activity in *Arabidopsis*.

L4 ANSWER 24 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003) DUPLICATE 6

TI Antisense suppression of **phospholipase D** alpha retards abscisic acid- and ethylene-promoted senescence of postharvest *Arabidopsis* leaves.

L4 ANSWER 25 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

(2003) DUPLICATE 7
TI Promoter analysis and expression of a **phospholipase D** gene from castor bean.

L4 ANSWER 26 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.

(2003)
TI Characterization of **phospholipase D**-overexpressed and suppressed **transgenic** tobacco and Arabidopsis.

L4 ANSWER 27 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI Low temperature tolerance in **transgenic** tobacco and Arabidopsis thaliana expressing sense and antisense **phospholipase D** gene.

L4 ANSWER 28 OF 30 CAPLUS COPYRIGHT 2003 ACS
TI Cloning of cDNA for coat protein of papaya leaf-distortion mosaic potyvirus (**PLDMV**) for preparation of **PLDMV**-resistant **transgenic** plants

L4 ANSWER 29 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
TI Characterization of **phospholipase D**-overexpressed and suppressed **transgenic** tobacco and Arabidopsis.

L4 ANSWER 30 OF 30 CAPLUS COPYRIGHT 2003 ACS DUPLICATE 8
TI **Transgenic** "Malling 26" apple expressing the attacin E gene has increased resistance to *Erwinia amylovora*

=> d 21 ab

L4 ANSWER 21 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.

=> d 21 so

L4 ANSWER 21 OF 30 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
SO Plant Biology (Rockville), (1999) Vol. 1999, pp. 56. print.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists Baltimore, Maryland, USA July 24-28, 1999 American Society of Plant Physiologists (ASPP)

=> d 23 ag

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L4 ANSWER 23 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) DUPLICATE 5
AB **Phospholipase D**(PLD; EC 3.1.4.4) has been proposed to be involved in a number of cellular processes including transmembrane signaling and membrane deterioration. **PLD** previously described from various **plant** sources generally requires millimolar ranges of calcium for optimal activity. In this study, we genetically suppressed the expression of this conventional **PLD** in Arabidopsis by introducing an antisense **PLD** cDNA. However,

both the antisense **transgenic** and wild-type **plants** showed comparable **PLD** activity in the presence of submicromolar concentrations of calcium and phosphatidylinositol 4,5-bisphosphate using phosphatidylcholine as a substrate. This new **PLD** activity was partially stimulated by phosphatidylinositol 4-phosphate, but not by other phospholipids, including phosphatidylinositol, phosphatidylserine, phosphatidylglycerol, phosphatidic acid, or phosphatidylcholine. Its requirement for polyphosphoinositides was further supported by its ability to be inhibited by neomycin. The polyphosphoinositide-dependent **PLD** requires calcium for activity, but no magnesium. The calcium stimulation was observed in the nanomolar range and reached a plateau at 5 micromolar calcium. The findings of this study demonstrate the presence of different **PLDs** that are regulated in a distinct manner in **plants**. The potential significance of a **PLD** that is regulated by polyphosphoinositides and physiological concentrations of Ca²⁺ is discussed.

=> d 23 so

L4 ANSWER 23 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) DUPLICATE 5
SO The Journal of biological chemistry, Mar 14, 1997. Vol. 272, No. 11. p. 7048-7054
Publisher: Bethesda, Md. : American Society for Biochemistry and Molecular Biology.
CODEN: JBCHA3; ISSN: 0021-9258

=> d 24 a

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L4 ANSWER 24 OF 30 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved.
(2003) DUPLICATE 6
AB Membrane disruption has been proposed to be a key event in **plant** senescence, and **phospholipase D** (**PLD**; EC 3.1.4.4) has been thought to play an important role in membrane deterioration. We recently cloned and biochemically characterized three different **PLDs** from Arabidopsis. In this study, we investigated the role of the most prevalent phospholipid-hydrolyzing enzyme, **PLDalpha**, in membrane degradation and senescence in Arabidopsis. The expression of **PLDalpha** was suppressed by introducing a **PLDalpha** antisense cDNA fragment into Arabidopsis. When incubated with abscisic acid and ethylene, leaves detached from the **PLDalpha**-deficient **transgenic plants** showed a slower rate of senescence than did those from wild-type and **transgenic** control **plants**. The retardation of senescence was demonstrated by delayed leaf yellowing, lower ion leakage, greater photosynthetic activity, and higher content of chlorophyll and phospholipids in the **PLDalpha** antisense leaves than in those of the wild type. Treatment of detached leaves with abscisic acid and ethylene stimulated **PLDalpha** expression, as indicated by increases in **PLDalpha** mRNA, protein, and activity. In the absence of abscisic acid and ethylene, however, detached leaves from the **PLDalpha**-deficient and wild-type **plants** showed a similar rate of senescence. In addition, the

suppression of **PLDalpha** did not alter natural **plant** growth and development. These data suggest that **PLDalpha** is an important mediator in phytohormone-promoted senescence in detached leaves but is not a direct promoter of natural senescence. The physiological relevance of these findings is discussed.

=> d 24 so

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SO The Plant cell, Dec 1997. Vol. 9, No. 12. p. 2183-2196
Publisher: [Rockville, MD : American Society of Plant Physiologists, c1989-
CODEN: PLCEEW; ISSN: 1040-4651

=> d 25 ab

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AB The expression of a castor bean (*Ricinus communis* L.) **phospholipase D** (**PLD**; EC 3.1.4.4) gene has been studied by examining its promoter activity in **transgenic** tobacco (*Nicotiana tabacum*) carrying a **PLD** promoter-glucuronidase transgene and by monitoring the levels of **PLD** mRNA in castor bean. Sequence and the 5' truncation analyses revealed that the 5' flanking region from nucleotide -1200 to -730 is required for the regulation and basal function of the **PLD** promoter. The **PLD** promoter in vegetative tissues is highly active in the rapidly growing regions such as the shoot apex and the secondary meristem producing axillary buds and vascular tissues of young leaves and stems. The **PLD** promoter activity in floral tissues was high in stigma, ovary, and pollen grains, but low in petals, sepals, the epidermis of anthers, styles, and filaments. The **PLD** promoter activity was enhanced by abscisic acid. Northern-blot analysis of **PLD** in castor bean showed that the **PLD** mRNA levels were high in young and metabolically more active tissues such as expanding leaves, hypocotyl hooks, developing seeds, and young seedlings, and they decreased in mature tissues such as fully expanded leaves and developed seeds. These patterns of expression suggest a role of **PLD** in rapid cell growth, proliferation, and reproduction.

=> d 25 so

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SO Plant physiology, Oct 1997. Vol. 115, No. 2. p. 387-395
Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889

=> d 26 ab

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=> d 26 so

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SO [Physiology, biochemistry, and molecular biology of plant lipids], p. 345-347
Publisher: Dordrecht ; Boston : Kluwer Academic, c1997.
ISBN: 0792343794 (alk. paper).

=> d 27 ab

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SO Plant Physiology (Rockville), (1996) Vol. 111, No. 2 SUPPL., pp. 133.
Meeting Info.: Annual Meeting of the American Society of Plant Physiologists San Antonio, Texas, USA July 27-31, 1996
ISSN: 0032-0889.

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FILE 'AGRICOLA, CAPLUS, BIOSIS' ENTERED AT 09:36:26 ON 29 MAY 2003
L1 11845 S PLD? OR PHOSPHOLIPASE D
L2 824 S L1 AND PLANT?
L3 43 S L2 AND TRANSGENIC
L4 30 DUP REM L3 (13 DUPLICATES REMOVED)

=> s 13 and transpiration

L5 2 L3 AND TRANSPiration

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=> dup rem 15
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L6          2 DUP REM L5 (0 DUPLICATES REMOVED)

=> d 1-2 ti

L6  ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2003 ACS
TI  Use of phospholipase D gene of Arabidopsis thaliana
    in regulating drought tolerant of transgenic plants

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    (2003)
TI  Regulation of plant water loss by manipulating the expression of
    phospholipase Dalpha.

=> d 1-2 so

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    CODEN: USXXCO

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    (2003)
SO  The Plant journal : for cell and molecular biology, Oct 2001. Vol. 28, No.
    2. p. 135-144
    Publisher: Oxford : Blackwell Sciences Ltd.
    ISSN: 0960-7412

=> d so

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TI  Use of phospholipase D gene of Arabidopsis thaliana
    in regulating drought tolerant of transgenic plants

=> s 14 and stomat?
L7          2 L4 AND STOMAT?

=> d 1-2 ti

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TI Regulation of **plant** water loss by manipulating the expression of phospholipase Dalpha.

L7 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS

TI Use of **phospholipase D** gene of *Arabidopsis thaliana* in regulating drought tolerant of **transgenic plants**

=> d 1-2 so

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=> s 14 and abscisic acid

L8 5 L4 AND ABSCISIC ACID

=> dup rem 18
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L9 5 DUP REM L8 (0 DUPLICATES REMOVED)

=> d 1-5 ti

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TI Use of **phospholipase D** gene of *Arabidopsis thaliana* in regulating drought tolerant of **transgenic plants**

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TI A rapid cytokinin response assay in *Arabidopsis* indicates a role for **phospholipase D** in cytokinin signalling

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TI Regulation of **plant** water loss by manipulating the expression of phospholipase Dalpha.

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TI Antisense suppression of **phospholipase D** alpha retards **abscisic acid**- and ethylene-promoted senescence of postharvest *Arabidopsis* leaves.

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TI Promoter analysis and expression of a **phospholipase D** gene from castor bean.

=> d 1-5 so

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SO U.S. Pat. Appl. Publ., 26 pp.
CODEN: USXXCO

L9 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2003 ACS
SO FEBS Letters (2002), 515(1-3), 39-43
CODEN: FEBLAL; ISSN: 0014-5793

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SO The Plant journal : for cell and molecular biology, Oct 2001. Vol. 28, No. 2. p. 135-144
Publisher: Oxford : Blackwell Sciences Ltd.
ISSN: 0960-7412

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Publisher: [Rockville, MD : American Society of Plant Physiologists, c1989-
CODEN: PLCEEW; ISSN: 1040-4651

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Publisher: Rockville, MD : American Society of Plant Physiologists, 1926-
CODEN: PLPHAY; ISSN: 0032-0889

=> d 2 ab

L9 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2003 ACS
AB Seedlings of *Arabidopsis thaliana* harboring a fusion of the cytokinin-responsive ARR5 gene promoter and the GUS reporter gene were used for a pharmacol. approach to study cytokinin signal transduction. The assay was shown to be rapid, sensitive, dose-dependent and highly specific for cytokinins, both adenine and phenylurea derivs. Numerous inhibitors of known signalling pathways were tested and some were shown to suppress reporter gene induction. Particularly, primary alc. that specifically inhibit **phospholipase D (PLD)** partially prevented cytokinin-induced GUS activity and reduced the accumulation of ARR5 gene transcripts. This indicates a role for **PLD** early during cytokinin signalling.

=> d 4 ab

L9 ANSWER 4 OF 5 AGRICOLA Compiled and distributed by the National Agricultural Library of the Department of Agriculture of the United States of America. It contains copyrighted materials. All rights reserved. (2003)
AB Membrane disruption has been proposed to be a key event in **plant senescence**, and **phospholipase D (PLD; EC 3.1.4.4)** has been thought to play an important role in membrane deterioration. We recently cloned and biochemically characterized three different **PLDs** from *Arabidopsis*. In this study, we investigated

the role of the most prevalent phospholipid-hydrolyzing enzyme, **PLDalpha**, in membrane degradation and senescence in *Arabidopsis*. The expression of **PLDalpha** was suppressed by introducing a **PLDalpha** antisense cDNA fragment into *Arabidopsis*. When incubated with **abscisic acid** and ethylene, leaves detached from the **PLDalpha**-deficient **transgenic plants** showed a slower rate of senescence than did those from wild-type and **transgenic control plants**. The retardation of senescence was demonstrated by delayed leaf yellowing, lower ion leakage, greater photosynthetic activity, and higher content of chlorophyll and phospholipids in the **PLDalpha** antisense leaves than in those of the wild type. Treatment of detached leaves with **abscisic acid** and ethylene stimulated **PLDalpha** expression, as indicated by increases in **PLDalpha** mRNA, protein, and activity. In the absence of **abscisic acid** and ethylene, however, detached leaves from the **PLDalpha**-deficient and wild-type **plants** showed a similar rate of senescence. In addition, the suppression of **PLDalpha** did not alter natural plant growth and development. These data suggest that **PLDalpha** is an important mediator in phytohormone-promoted senescence in detached leaves but is not a direct promoter of natural senescence. The physiological relevance of these findings is discussed.

=> d 5 so

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=> s 14 and turgidity

L10 0 L4 AND TURGIDITY

=> s 14 and drought

L11 3 L4 AND DROUGHT

=> d 1-3 ti

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TI Involvement of a novel *Arabidopsis* **phospholipase D**, AtPLDdelta, in dehydration-inducible accumulation of phosphatidic acid in stress signalling.

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TI Regulation of **plant** water loss by manipulating the expression of **phospholipase Dalpha**.

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TI Use of **phospholipase D** gene of *Arabidopsis thaliana* in regulating drought tolerant of **transgenic plants**

=> d 1-3 so

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SO The Plant journal : for cell and molecular biology, June 2001. Vol. 26, No. 6. p. 595-605
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ISSN: 0960-7412

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